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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/870,242	05/30/2001	Jitendra Singh Goela	51048-2 DIV (3568-33-000)	9573

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EXAMINER	
AUGHENBAUGH, WALTER	
ART UNIT	**PAPER NUMBER**
1772	

DATE MAILED: 10/07/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/870,242	GOELA ET AL.	
	Examiner	Art Unit	
	Walter B. Aughenbaugh	1772	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *19 July 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *27-30 and 32-37* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *27-30 and 32-37* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Acknowledgement of Applicant's Amendments

1. Applicant's amendments in claims 27 and 35 in the Amendment filed July 19, 2005 have been received and considered by Examiner.

2. New claims 36 and 37 presented in the Amendment filed July 19, 2005 have been received and considered by Examiner.

REPEATED REJECTIONS

Claim Rejections - 35 USC § 103

3. The 35 U.S.C. 103 rejection of claims 27-29 and 32-34 over Suda et al. that was repeated in paragraph 4 of the previous Office Action mailed April 20, 2005 has been repeated for the reasons previously made of record. The amendment in claim 27 in the Amendment filed July 19, 2005 does not affect the rejection of record.

4. The 35 U.S.C. 103 rejection of claim 30 over Suda et al. that was repeated in paragraph 5 of the previous Office Action mailed April 20, 2005 has been repeated for the reasons previously made of record.

5. The 35 U.S.C. 103 rejection of claim 35 over Suda et al. that was repeated in paragraph 6 of the previous Office Action mailed April 20, 2005 has been repeated for the reasons previously made of record and for the following reasons that address the amendments made in claim 35 in the Amendment filed July 19, 2005: Suda et al. teach that no cracking occurs during the formation of the article of Suda et al. (col. 4, lines 23-27), so cracks do not propagate during the formation of the article of Suda et al.

NEW REJECTIONS

Claim Rejections - 35 USC § 103

6. Claims 36 and 37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Suda et al.

In regard to claim 36, Suda et al. teach the shell as discussed above in regard to claim 27. While Suda et al. teach that the shell has a diameter of 5.9inches (col. 6, lines 33-35, 150mm=5.9inches), Suda et al. fail to explicitly teach that the diameter of the shell can be increased to 18 inches or greater. Such a modification, however, would have involved a mere change in size. A change in size is generally recognized as being within the level of ordinary skill in the art in the absence of unexpected results (MPEP 2144.04 IV A). Since Suda et al. teach that the carbon substrate of Suda et al. is formed of a composite having a thermal expansion that is close to that of the silicon carbide film such that no cracking or deformation of the silicon carbide shell occurs during cooling and that the thermal expansion coefficient of the carbon substrate is easily controlled (col. 4, lines 15-23, col. 3, lines 20-25 and col. 2, lines 12-23), it would have been obvious to one of ordinary skill in the art at the time the invention was made to have formed the shell of Suda et al. such that it has a particular diameter, depending on the particular desired end result, such as 18 inches or greater as claimed, via control of the thermal expansion of the carbon substrate of Suda et al. such that the thermal expansion of the carbon substrate is close to that of the silicon carbide film such that no cracking or deformation of the silicon carbide shell occurs during cooling as taught by Suda et al.

In regard to claim 37, Suda et al. teach the shell as discussed above in regard to claim 27 (claims 27 and 37 are identical except for the "and without propagating cracks" recitation at the

end of claim 37). Suda et al. teach that no cracking occurs during the formation of the article of Suda et al. (col. 4, lines 18-23), so there are no cracks in the shell taught by Suda et al.

Response to Arguments

7. Applicant's arguments regarding the 35 U.S.C. 103 rejection of claims 27-29 and 32-34 presented on pages 4-7 of the Amendment filed July 19, 2005 have been fully considered but are not persuasive.

Applicant states that ceramic materials are "not readily size scalable": it is not disputed that there is an element of unpredictability in the scaling of SiC materials with regard to crack/defect formation in SiC materials formed via at least some prior art processes, but Suda et al. explicitly teaches that crack formation in the SiC shell of Suda et al. is eliminated by the process used by Suda et al. to form the shell (col. 4, lines 18-23); therefore, one of skill in the art would have had reasonable expectation of success in fabricating a shell having an external perimeter that is larger than any of those explicitly taught in Suda et al.

On pages 5-6 of the instant Amendment, Applicant discusses the Declaration under 37 C.F.R. 1.132 filed July 19, 2005 as support for Applicant's arguments that the shell of Suda et al. cannot be scaled to the sizes recited in the Applicant's claims. Applicant argues that "increasing the size of ceramic materials... during synthesis is not generally recognized as being within the level of ordinary skill in the art", "especially" when the volume of the shell is increased "by a factor of 2 or more". The "during synthesis" portion of this statement limits the applicability of this statement to increasing the size of the shell "during synthesis". The size of the shell of Suda et al. is not increased "during synthesis"- the shell is formed by deposition onto a substrate- so this argument does not apply to Suda et al. Applicant also argues that the probability of flaw

formation is larger the larger the size of the article to be formed, but Applicant gives no evidence indicating whether or not the difference in the actual probability values between the size/s explicitly taught by Suda et al. and Applicant's claimed minimum size is sufficient for flaw formation to occur if the shell of Suda et al. of Applicant's claimed minimum size was formed. Applicant argues that *In re Rose* is not applicable, but *In re Rose* is applicable insofar as that case and the instant application involve a mere change in size of the claimed article over the prior art.

8. Applicant's arguments regarding the 35 U.S.C. 103 rejection of claim 35 presented on pages 8-9 of the Amendment filed July 19, 2005 have been fully considered but are not persuasive. Applicant repeats the arguments presented in regard to the rejection of claims 27-29 and 32-34, which have been addressed above in this Office Action. The Office maintains its position that the method steps of claim 35 are not germane to the patentability of the claimed article. The structural limitations recited by the product by process claim have been treated, and are met by the rejection of record.

Response to Declaration under 37 C.F.R. 1.132 filed July 19, 2005

9. The Declaration under 37 C.F.R. 1.132 filed July 19, 2005 has been fully considered but is not persuasive.

In paragraph 7, Declarant (and Applicant) states that "increasing the size of ceramic materials... during synthesis is not generally recognized as being within the level of ordinary skill in the art", "especially" when the volume of the shell is increased "by a factor of 2 or more". The "during synthesis" portion of this statement limits the applicability of this statement to increasing the size of the shell "during synthesis". The size of the shell of Suda et al. is not

increased "during synthesis"- the shell is formed by deposition onto a substrate- so this argument does not apply to Suda et al.

In paragraphs 8-18, Declarant states that the probability of flaw formation is larger the larger the size of the article to be formed, but Declarant gives no data indicating whether or not the difference in the actual probability values between the size/s explicitly taught by Suda et al. and Applicant's claimed minimum size is sufficient for flaw formation to occur if the shell of Suda et al. of Applicant's claimed minimum size was formed. Applicant's statement in paragraph 14 is inconclusive ("unlikely") and Applicant's statement in paragraph 18 is inconclusive ("can result in a dome with propagating cracks"). In further regard to paragraph 14, Suda et al. clearly did use "a substrate material that has CTE close to that of the Silicon Carbide" (col. 4, lines 18-23), so the contention in paragraph 14 cannot be considered without actual data supporting this contention and an explanation as to how this overcomes the rejection of record (Suda et al. teach that cracks do not form at col. 4, lines 18-23, so whether or not "the CTE of the substrate material matches [that of SiC] at all temperatures", cracks do not form as taught by Suda et al.: the contention that "the CTE of the substrate material matches [that of SiC] at all temperatures" does not overcome Suda et al.'s explicit teaching that cracks do not form).

Conclusion

10. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO

MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Walter B. Aughenbaugh whose telephone number is 571-272-1488. The examiner can normally be reached on Monday-Thursday from 9:00am to 6:00pm and on alternate Fridays from 9:00am to 5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Harold Pyon, can be reached on 571-272-1498. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Walter B. Aughenbaugh
09/30/05 WBA

HAROLD PYON
SUPERVISORY PATENT EXAMINER
1772

9/30/05